



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/748,006 | 12/29/2003 | Sunghoe Yoon | 10125/4137 | 6543 |
| 7590 09/13/2006 | | | EXAMINER | |
| Brinks Hofer Gilson & Lione Post Office Box 10395 Chicago, IL 60610 | | | QI, ZHI QIANG | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2871 | |

DATE MAILED: 09/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/748,006 | Applicant(s) YOON, SUNGHOE | |
| | Examiner Mike Qi | Art Unit 2871 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 8-12 and 21-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 19, 2006 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 6-7, 13-14 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of US 6,641,874 B2 (Kuntz et al) and further in view of US 6,911,238 B2 (Okawa et al).

Regarding claims 1-3 and 13-14, AAPA teaches (paragraphs 0017-0026; Fig.2) a conventional LCD using an optical film (202-205) which comprises:

(concerning claim 1)

- liquid crystal panel (201) having upper plate, lower plate and liquid crystal injected between the two plates;
- polarizing plate (208) disposed on the liquid crystal panel (201);

Art Unit: 2871

- optical film (202-205) containing a phase difference film (203) and a linear polarizer (202);
- the linear polarizer (202) having a light transmittance axis perpendicular to a light transmittance axis of the polarizing plate (208), and the optical film (202-205) is positioned at a bottom surface of the liquid crystal panel (201).

(concerning claims 2-3 and 13-14)

- circular polarizer (205) containing cholesteric liquid crystal (205b) on a transparent substrate (205a);
- adhesive layer (209d) on the circular polarizer (205);
- forming a compensation film (204) between the phase difference film (203) and the circular polarizer (205);
- phase difference film (203) formed on the adhesive layer (209d);
- forming another adhesive layer (209c) on the compensation film (204).

AAPA does not explicitly teach that the linear polarizer contacting the phase difference film transmits light to the liquid crystal panel or the linear polarizer directly coating liquid crystal on the phase difference film transmits light to the liquid crystal panel.

Kuntz teaches (col. 3, lines 26 – 60) a multilayer structure of an optical film wherein the linear polarizer directly coating polymerizable LC (liquid crystal) material on the phase difference film (QWF) (the quarter wave film functions as phase difference film), and also means the linear polarizer contacting the phase difference film; and such that the color effect being enhanced (col.1, lines 55-64).

Although Kuntz does not teach use of the optical film to transmit light to a liquid crystal panel, Kuntz teaches the coating structure of an optical film as set forth above. With such teaching of the multilayer coating structure to combine the structure of a liquid crystal display as taught from AAPA, the optical film would be used to transmit light to a liquid crystal panel, and the color image display needs to enhance the color effect in order to prevent coloring shift. As a general available knowledge, such directly coating and contacting would reduce the thickness of the device, so as to reduce the light absorption and increasing the brightness, and such multilayer as an optical film would be direct and easy prepared (col.7, lines 24-26).

As evidence, **Okawa** teaches (col.23, lines 16-42; Fig.2) that use stacks (20) of polarization selective film (18'), retarder (17) and light-absorbing polarizing plate (14) laminated as polarizing plate (i.e., directly coated or contacted together), such that the light utilization efficiency is increased with the result that the brightness of the display is increased.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the optical film of AAPA with the teachings of the linear polarizer directly coating liquid crystal or contacting on the QWF (functions as phase difference film) as taught by Kuntz and use stack structure as taught by Okawa, since the skilled in the art would be motivated for enhancing the color effect such as improving the viewing angle dependent color effect and increasing the brightness.

Regarding claims 6-7 and 19-20, AAPA teaches the invention set forth above

Art Unit: 2871

except for that the thickness of the optical film at most about 200 μm and the linear polarizer has a thickness of a few μm .

Kuntz teaches (col.4, lines 49-51) that the linear polarizer has a thickness from 0.1 to 10 μm , i.e., a few μm .

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists (see MPEP. 2144.05 I.).

Kuntz further teaches (col.4, lines 55-57) that the total thickness of the circular polarizer (linear polarizer laminated on phase difference film) is preferably from 0.2 to 20 μm . As a general available knowledge, the films should be made as thin as possible so as to reduce the light absorption and increase the brightness. Such that the total thickness of the optical film at most about 200 μm (less than 200 μm) would have been at least obvious.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the optical film of AAPA with the teachings of the thickness of the linear polarizer and total thickness of the circular polarizer as taught by Kuntz, since the skilled in the art would be motivated for achieving the optical film as thin as possible so as to increase the brightness.

3. Claims 4-5 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Kuntz and Okawa as applied to claims 1-3, 6-7, 13-14 and 19-20 above, and further in view of US 6,882,386 B2 (Moon et al).

Regarding claims 4-5 and 16-17, AAPA, Kuntz and Okawa teach the invention

Art Unit: 2871

set forth above except for the linear polarizer comprising a lyotropic liquid crystal contains dye or pigment.

Moon teaches (col.9, lines 56 – 60) the linear polarizer comprising a lyotropic liquid crystal (formed by coating lyotropic liquid crystal). Kuntz further teaches (col.3, lines 45-46) that the linear polarizer is prepared by coating liquid crystal material having a dye. Moon indicates (col.3, lines 1-5) that such display device preventing light leakage so as to increase the luminance (brightness).

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the optical film of AAPA, Kuntz and Okawa with the teachings of the linear polarizer using lyotropic liquid crystal as taught by Moon, since the skilled in the art would be motivated for preventing the light leakage and increasing the brightness (col.3, lines 1-5).

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Kuntz and Okawa as applied to claims 1-3, 6-7, 13-14 and 19-20 above, and further in view of US 5,110,623 (Yuasa et al).

Regarding claim 15, AAPA, Kuntz and Okawa teach the invention set forth above except for that the liquid crystal is coated by a method of bar coating, knife coating or slit-die coating method.

Yuasa teaches (col.13, lines 56-69; Fig.1) the liquid crystal material (1) being coated into a film using bar coating method, and such coating method can be easily performed.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the optical film of AAPA, Kuntz and Okawa with the teachings of bar coating as taught by Yuasa, since the skilled in the art would be motivated for achieving easily performing the coating (col. 13, lines 56-69).

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA Kuntz and Okawa as applied to claims 1-3, 6-7, 13-14 and 19-20 above, and further in view of US 6,879,356 B2 (Hsieh et al).

Regarding claim 18, AAPA ,Kuntz and Okawa teach the invention set forth above except for that the linear polarizer has an E-mode polarization.

Hsieh teaches (col.2, lines 53 –62) that linear polarizer having E-mode polarization (E-mode polarizer) to enhance brightness and viewing angle property and prevent color shift.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the optical film of AAPA, Kuntz and Okawa with the teachings of the linear polarizer using E-mode polarization as taught by Hsieh, since the skilled in the art would be motivated for enhancing brightness and viewing angle property and preventing color shift as E-mode polarizer enables extraordinary light to pass (see col.2, lines 53 –62).

Response to Arguments

6. Applicant's arguments filed June 19, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the reference Kuntz does not teach use of the multilayer reflective film to transmit light to a liquid crystal display and no motivation to combine the multilayer reflective film of Kuntz with the optical film of AAPA, it is respectfully point out that although Kuntz does not teach use of the optical film to transmit light to a liquid crystal panel, Kuntz teaches the coating structure of an optical film as set forth above. With such teaching of the multilayer coating structure to combine the structure of a liquid crystal display as taught from AAPA, the optical film would be used to transmit light to a liquid crystal panel, and the color image display needs to enhance the color effect in order to prevent coloring shift. As a general available knowledge, such directly coating and contacting would reduce the thickness of the device, so as to reduce the light absorption and increasing the brightness, and such multilayer as an optical film would be direct and easy prepared (col.7, lines 24-26). As evidence, Okawa teaches (col.23, lines 16-42; Fig.2) that use stacks (20) of polarization selective film (18'), retarder (17) and light-absorbing polarizing plate (14) laminated as polarizing plate (i.e., directly coated or contacted together), such that the light utilization efficiency is increased with the result that the brightness of the display is increased.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2871

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299.

The examiner can normally be reached on M-T 8:00 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ZQQ

Mike Qi
Patent examiner
Sep. 8, 2006